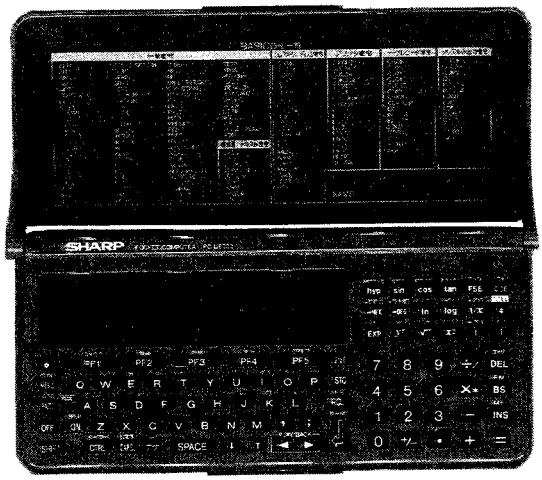
SHARP SERVICE MANUAL

CODE: 00ZPCE500SSME



MODEL PC-E500S

1. GENERAL

The PC-E500S is a modified version of the PC-E500, having the easy-to-read FSTN LCD. The major changes lie in the resin key-top and the hard cover installation method.

2. SPECIFICATIONS

- Model : PC-E500S
- Display : 40 digits x 4 lines (5 x 7 dot matrix LCD display)
- Arithmetic capacity : Single precision; 10 digits (mantissa) + 2 digits (exponent)
  Double precision; 20 digits (mantissa) + 2 digits (exponent)
  Calculation, however, is performed in the single precision under the CAL mode, the MATRIX mode, and the STAT mode.
- Arithmetic method : According to the formula (with the priority discrimination function)
- Programming language : BASIC
- CPU : CMOS 8 bit CPU
- System ROM : 512K byte
- Memory capacity : System area .....About 3.8K byte
  Fixed variable (A - Z) area.....312 byte
  Program data area .....28,600 byte
- Stacks : Total 145 byte
  Subroutine.....4 byte for one step
  FOR-NEXT.....21 byte for one step
  REPEAT-UNTIL.....7 byte for one step
  WHILE-WEND.....8 byte for one step
  SWITCH-CASE-DEFAULT-ENDSWITCH
  .....9 byte for one step
- Basic arithmetic functions : Basic functions;
  Four arithmetic rules
  Functional;
  Trigonometric, inverse trigonometric, hyperbolic, inverse hyperbolic, logarithmic, exponential, angular transformation, power raising, power root, coordinate transformation, square root, ratio of integers, absolute value, signed function, ratio of the circumference, and others.
- Editing functions : Horizontal cursor control (◀, ▶)
  Insertion (INS)
  Deletion (DEL, BS)
  Line up and down (↑, ↓)

Serial I/O

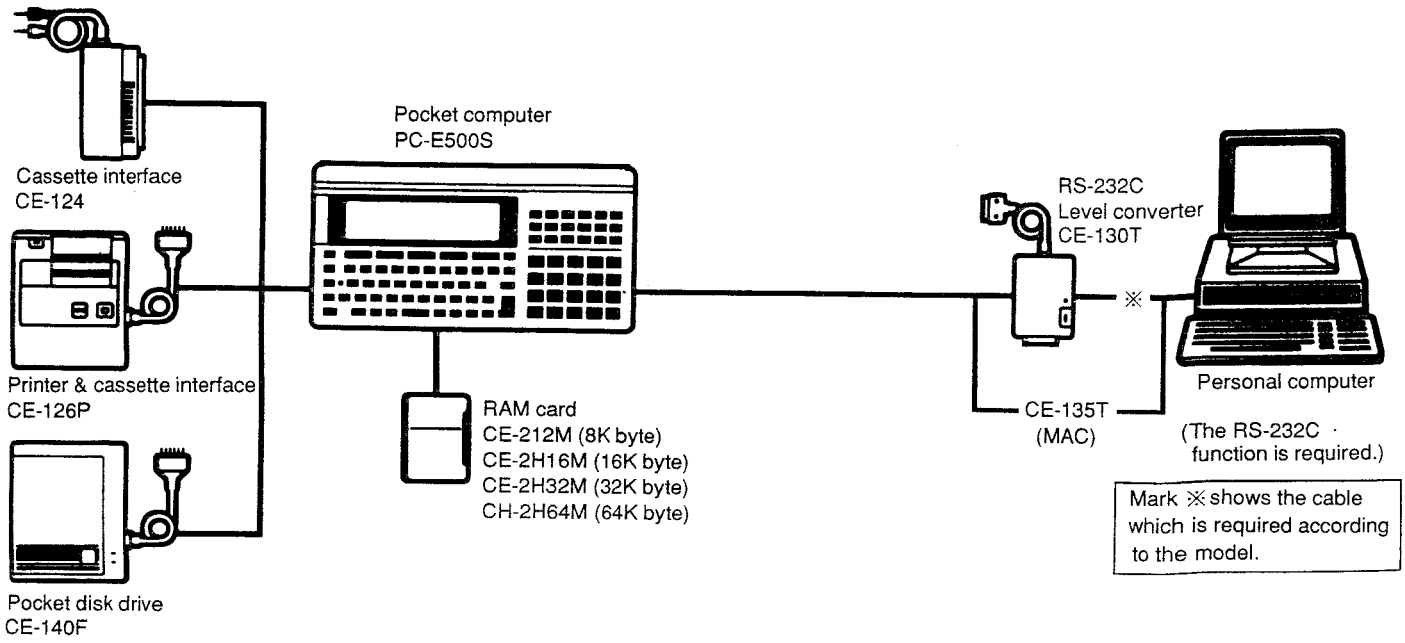
- Communication mode : Advance sync (asynchronous) system, half-duplex/full-duplex mode
- Communication speed : 300, 600, 1200, 2400, 4800, 9600 bps
- Parity bit : Even, odd, none
- Word length : 7, 8 bits
- Stop bit : 1, 2 bits
- Connector : 15-pin connector (from connection with an external device)
- Output signal level : C-MOS level (4 ~ 6V)
- Interface signal : Input.....RD, CS, CD
  Output.....SD, RS, RR, ER
  Others ..... SG, FG, VC
- Memory protection : Battery backup (The program and data in memory are protected when the power is off.)
- Operating temperatures : 0 °C ~ 40 °C
- Power source : Operating; 6V ⎓ (DC), Allcaline battery (UM4) x 4
  Memory protection; 3V ⎓ (DC), Lithium battery (CR2016) x 1
- Battery life : Approx. 70 hours under continuous, normal use. (10 minutes of operation or program execution per hour under temperature of 20 C with 50 minutes of displaying.)
  The battery life depends on the operating conditions and usage.
- Power consumption : 0.09W
- External dimensions : 220mm (W) x 202.5mm (D) x 14mm (H) (with the hard cover opened)
  220mm (W) x 104.5mm (D) x 19mm (H) (with the hard cover closed)
- Weight : 340 g (including the batteries)
- Accessories : UM4 battery x 4 pcs., Instruction manual, CR2016 battery x 1pcs., screwdriver (for replacing the memory backup battery)

Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

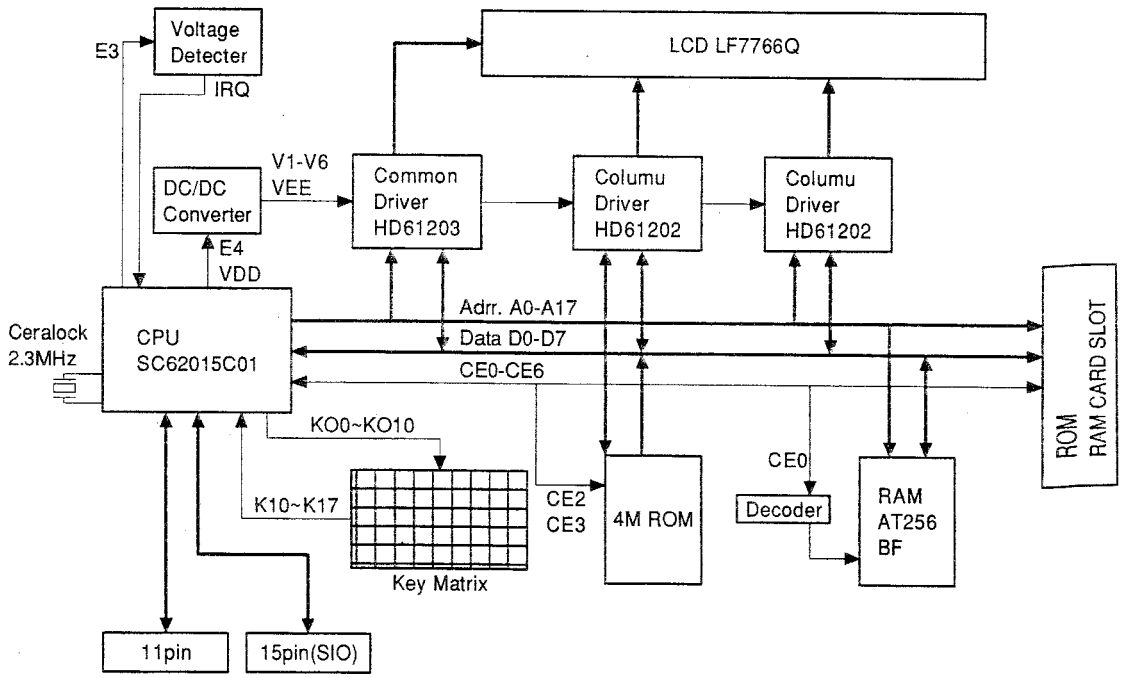
SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

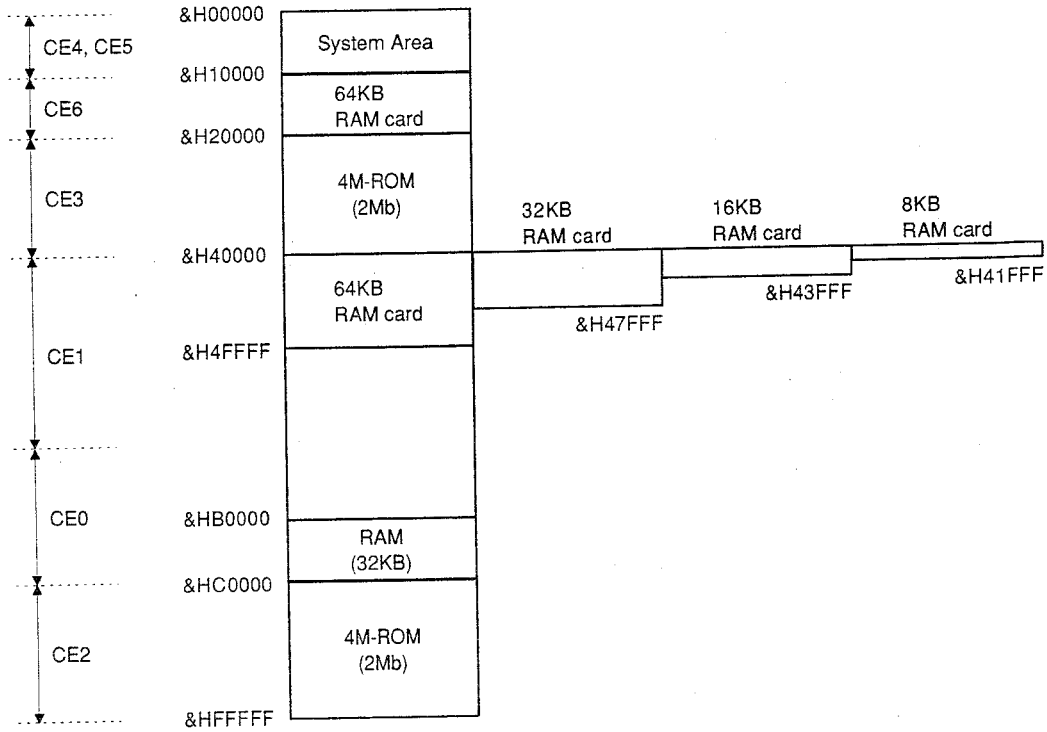
3. System composition



4. PC-E500S system block diagram



5. Memory map



6. LSI description

CPU (SC62015) pin signal description

Pin No.	Signal name	I/O	Signal description
1	X1	O	Ceramic oscillation output
2	X2	I	Ceramic oscillation input
3	X3	O	CR oscillation output
4	X4	I	CR oscillation input
5	VDD	O	Display power (convertor) control output
6	VCC	POWER	(+) electrode input pin
7	RESET	I	Reset input. Reset at HIGH level.
8	GND	POWER	(-) electrode input pin
9	TEST	I	Test input
10	CI	I	Cassette signal input pin
11	CO	O	Cassette signal output pin
12	ON	I	ON key input pin. Normally pulled down to LOW level.
13	WR	O	Write clock. Normally HIGH.
14	MRQ	—	(Reserved)
15	K10	I	KEY input pin
〃	〃	〃	
22	K17	I	
23	DIO0	I/O	Data bus
〃	〃	〃	
30	DIO7	I/O	
31	A0	O	Address bus
〃	〃	〃	
49	A18	O	
50	VDISP	—	(Reserved)
51	VA	—	
52	φD	O	Clock output pin for display chip
53	KO15	O	SIO PRQ (Reserved)
54	KO14	O	HIGH with the ER OPEN command from SIO

Pin No.	Signal name	I/O	Signal description
55	KO13	O	SIO RR (Can be received in the main body.)
56	KO12	O	SIO RS (Main body send request)
57	KO11	O	Key strobe signal
58	KO10	O	
59	IRQ	I	Low battery detection input pin
60	φOUT	—	(Reserved)
61	CE7	—	
62	CE6	O	ROM card chip select signal (Active HIGH), 10000~1FFFF
63	CE5	O	Display chip select signal (Active HIGH), 00000~03FFF and 08000~0BFFF
64	CE4	—	(Reserved)
65	CE3	—	
66	CE2	O	Internal ROM chip enable signal, C0000~FFFFF
67	CE1	O	RAM card chip enable signal, 40000~7FFFF
68	CE0	O	Internal RAM chip enable signal, 80000~BFFFF
69	φA	—	(Reserved)
70	DIS	—	
71	HA	—	
72	RD	—	
73	KO9	O	Key strobe signal
〃	〃	〃	
82	KO0	O	
83	RXD	I	SIO RD (Receive data)
84	TXD	O	SID SD (Send data)
85	E15	I	CE-140F data input pin
86	E14	I	
87	E13	I	
88	E12	I	
89	E11	O	11 pin DIN, P-ch open output
90	E10	O	11 pin DOUT, P-ch open output
91	E9	O	11 pin IO2, P-ch open output
92	E8	O	11 pin IO1, P-ch open output
93	E7	I	11 pin ACK
94	E6	O	11 pin BUSY, P-ch open output
95	E5	—	(Reserved)
96	E4	O	Display power (convertor) control signal
97	E3	O	Low battery voltage control signal
98	E2	I	SIO CS (Remote station transmission enable)
99	E1	I	SIO CD (Remote station send request)
100	E0	I	SIO PAK (Reserved)

7. Low battery detection circuit

This model is equipped with the low battery detection circuit, the operations of which are described below. (Location Nos. of the parts are different from the actual ones.)

As shown in the figure below, the output of the voltage detecting IC [LBIC (RH5VA39A)] turns HIGH when input voltage VIN exceeds detecting voltage VD. When, on the contrary, VIN falls below VD, the output turns LOW.

The LBIC (RH5VA39A) detects two levels; the CAU level and the STOP level. For that reason, a voltage applied to the input pin (2 pin) is divided by R1 and R2, and R2 is turned on/off by the CAU signal of G.A.

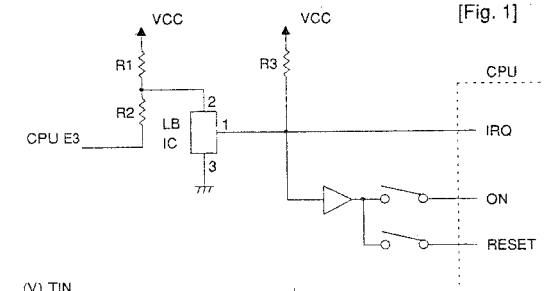
When the power voltage falls below the CAU level, as shown in Fig. 3, the BATT symbol lights up. When it falls further below the STOP level, the BATT symbol goes off.

To detect the CAU level, the CPU E3 is turned on (LOW) and the CPU IRQ pin state is checked. (If the IRQ pin is at LOW, the symbol lights up.)

When the CAU level is detected, the CAU pin is turned off (HIGH). (When the CAU E3 is turned off, resistance is not divided, rising the potential at BIC 2 pin and turning the output from LOW to HIGH.) Then the CPU IRQ pin is checked again to check the STOP level.

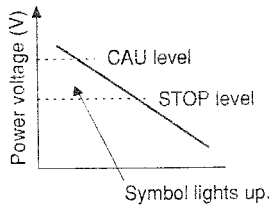
After detecting the STOP level, ON key and RESET key are made invalid.

[Fig. 1]



Voltage detection IC operation

[Fig. 2]



Symbol lights up.

[Fig. 3]

Low battery detection circuit check
CAU level VCC-GND: 4.2V - 4.6V
STOP level VCC-GND: 3.8V - 4.2V

8. Current consumption check

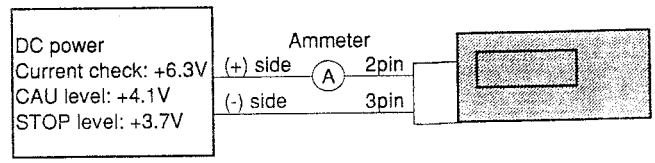
Power source: 11-pin connector, +5V - 0V applied to VCC (2 pin) - GND (3 pin)

Current: At ON (BASIC mode with ">" displayed), 3.29 mA or less.
At OFF (Power OFF), 22.8 uA or less.

Reference

	operation	display	off	back-up
CPU	4.2mA	220μA	3μA	
ROM	6.12mA	139μA	2μA	
RAM	5.98mA	2μA	2μA	1μA
HD61203	1mA	←		
HD61202	500μA	100μA	15μA	
DC-DC converter	1.5mA	1.5mA		
VDD	0.75mA	←		
RH5VA39A	3.9μA	←	←	
TC4S81F	1μA	←	←	
TC3W01F	2μA	←	←	1μA
TC4S66F	0.25μA	←	←	0.13μA
TC7S08F	1μA	←	←	
TC7S02F	1μA	←	←	0.25μA
TC4S11F	0.25μA	←	←	

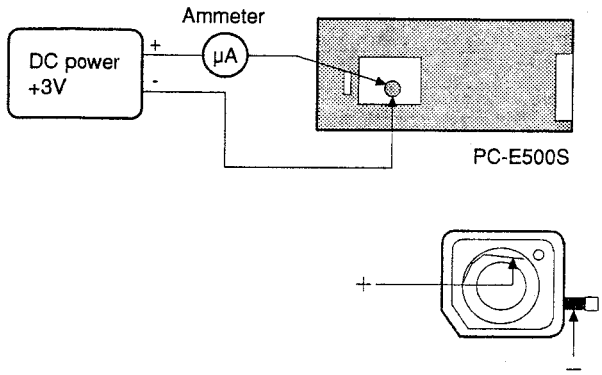
8-1. Current consumption and low battery voltage detection



	Operating procedure	Check item
1	• Turn on the main DC power (+6.3V ±0.1V). • While pressing ON key, press RESET key. • Press Y key to initialize the internal RAM.	
2	• Press PF1 key to go into the BASIC mode.	• Check ">" display and check the current value. (The current should be 3.77 mA or less.)
3	• Set the DC power to +4.1 ±0.05V.	• Check that the BATT symbol lights up.
4	• Set the DC power to +3.7V ± 0.1V.	• Check that the display is out
5	• Return the DC power to +6.3V ± 0.1V.	• Check that the display is out and check the current. (The current should be 22.8μA.)
6	• Disconnect the 11-pin connector. • Short 2 pin and 3 pin of the 11-pin connector with a 3.9KΩ resistor for 6 sec.	

Note: If there are any data or program, save them in advance to this check.

8-2. Backup current detection



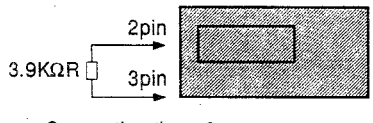
	Operating procedure	Check item
1	• Set the DC power to +3.0V ±0.1V.	
2	• Apply a probe to the backup battery terminal of the set. (Be careful not to mistake the DC power polarity. The positive (+) terminal should be brought into contact with the battery terminal from the side, not from the above, and the negative (-) terminal should be connected with the soldered section.)	• Check the current value. (0.1 μA ~ 2.38 μA)
3	• Disconnect the probe.	

8-3. Built-in RAM memory protection function check

① Release the RAM card cover lock switch and turn off the power.

② Set the built-in RAM memory protection switch to B and remove one UM4 battery.

③ Connect 2 pin and 3 pin of the 11-pin connector with a 3.9KΩ resistor for 6 sec.



· Connecting time: 6 sec

④ Install the UM4 battery which was previously removed to the original position, set the RAM card lock switch to the lock position, and press RESET key.

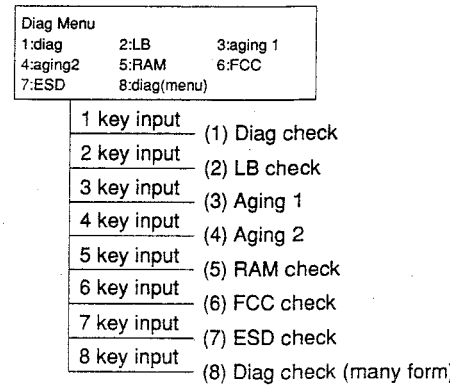
⑤ Check that "NO MEMORY" is displayed. (Check of the memory protection switch function)

⑥ Set the built-in RAM memory protection switch to A and press ON key.

⑦ Check that "MAIN MENU" is displayed. (Check of the memory protection function)

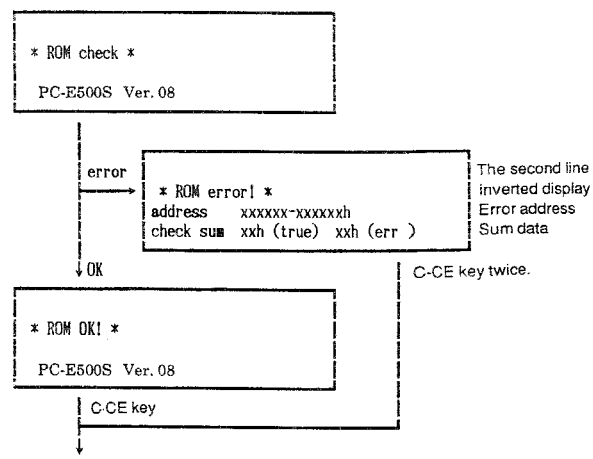
9. Diag

Entering the diag mode: Turn of the power, keep pressing [SHIFT] key and [,] key, press [RESET] key. Release [RESET] key, then release [SHIFT] key and [,] key.

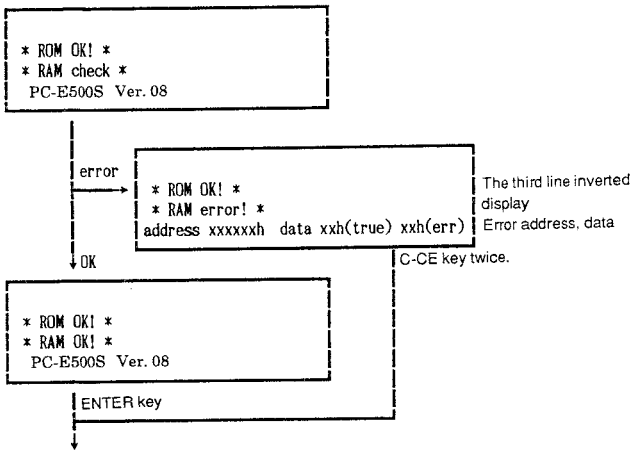


(1) Diag check

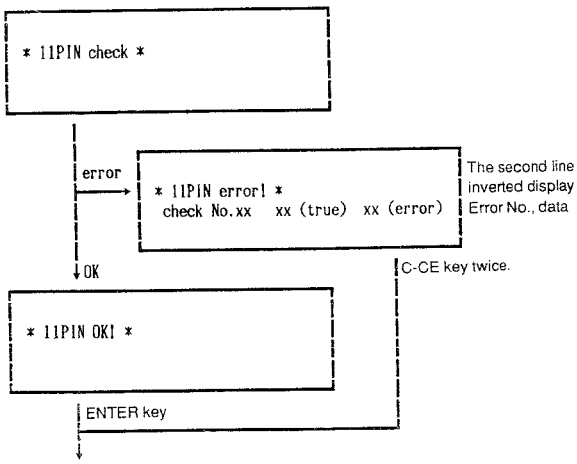
Main menu
↓ 1 key
① LCD check
Cross-stitch display 1 (LCD left upper corner lights up.)
↓ ENTER key
Cross-stitch display 2 (Inverted cross-stitch display 1)
↓ ENTER key
Slanted line display 1
↓ ENTER key
Slanted line display 2 (Inverted slanted-line display 1)
↓ ENTER key
Rain drop display (Lower half of the screen)
↓ ENTER key
② ROM check



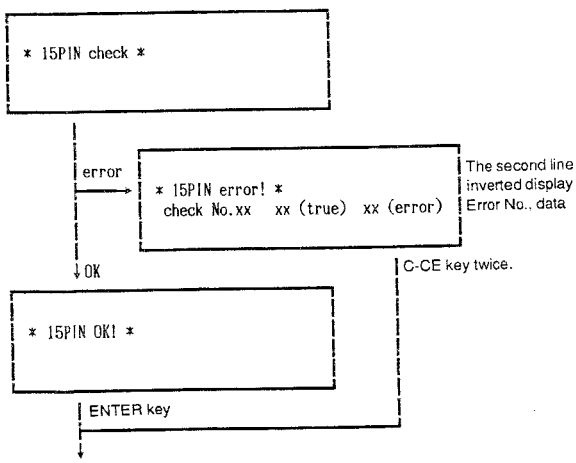
③ RAM check



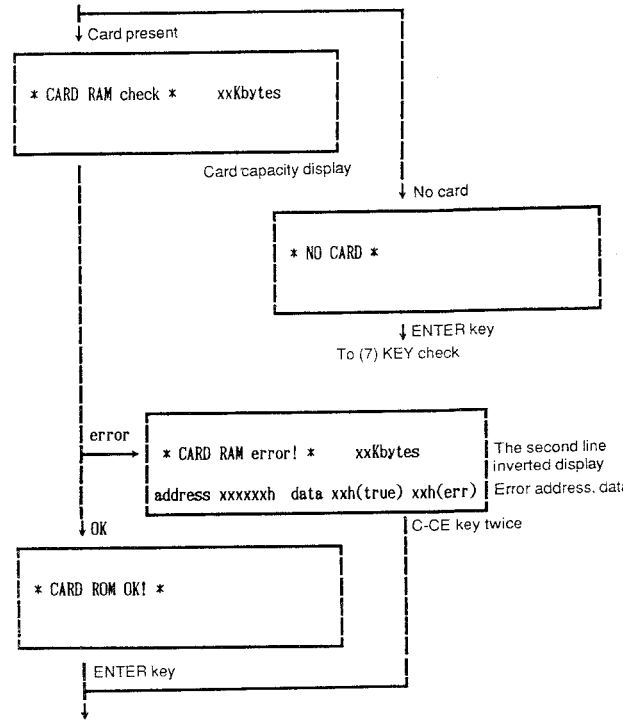
④ 11 pin check



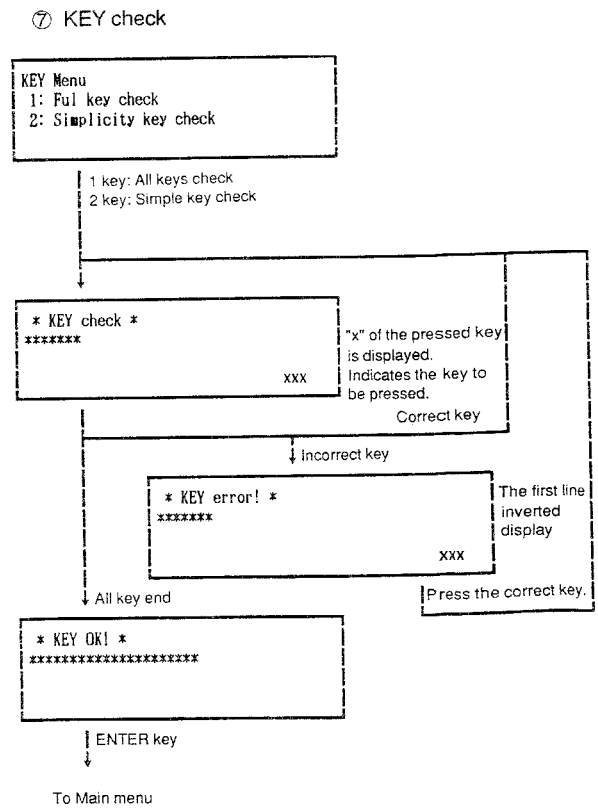
⑤ 15 pin check



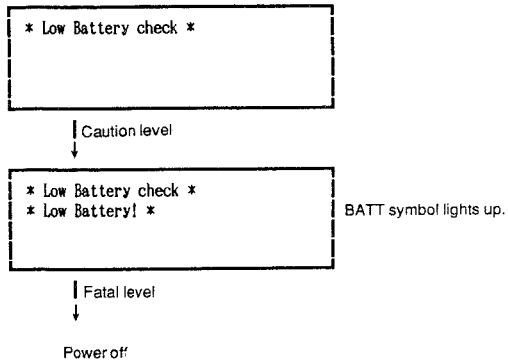
⑥ Card RAM check



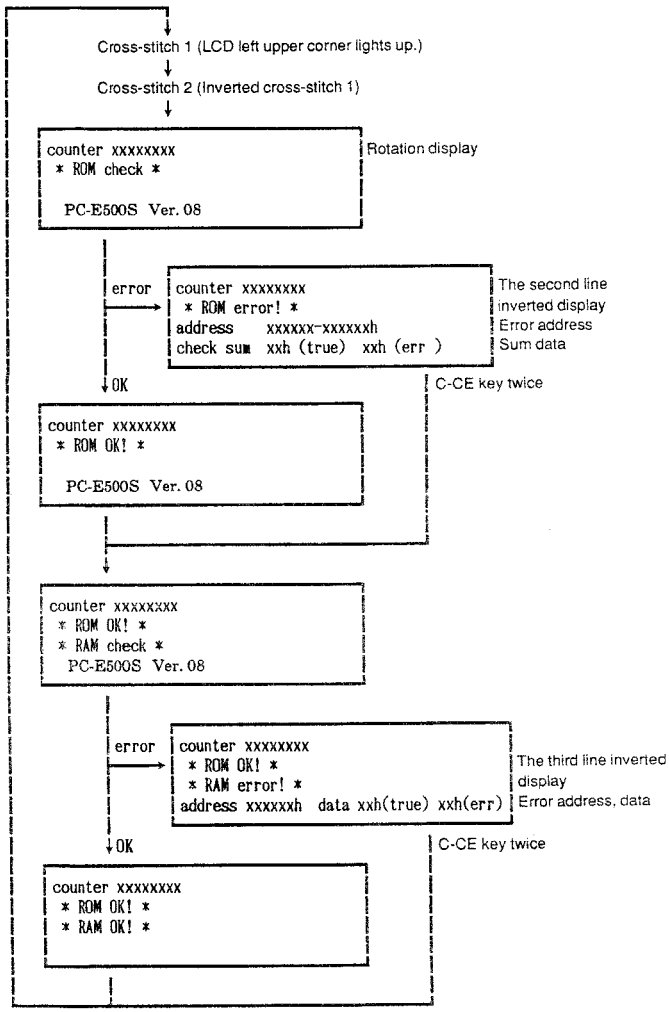
⑦ KEY check



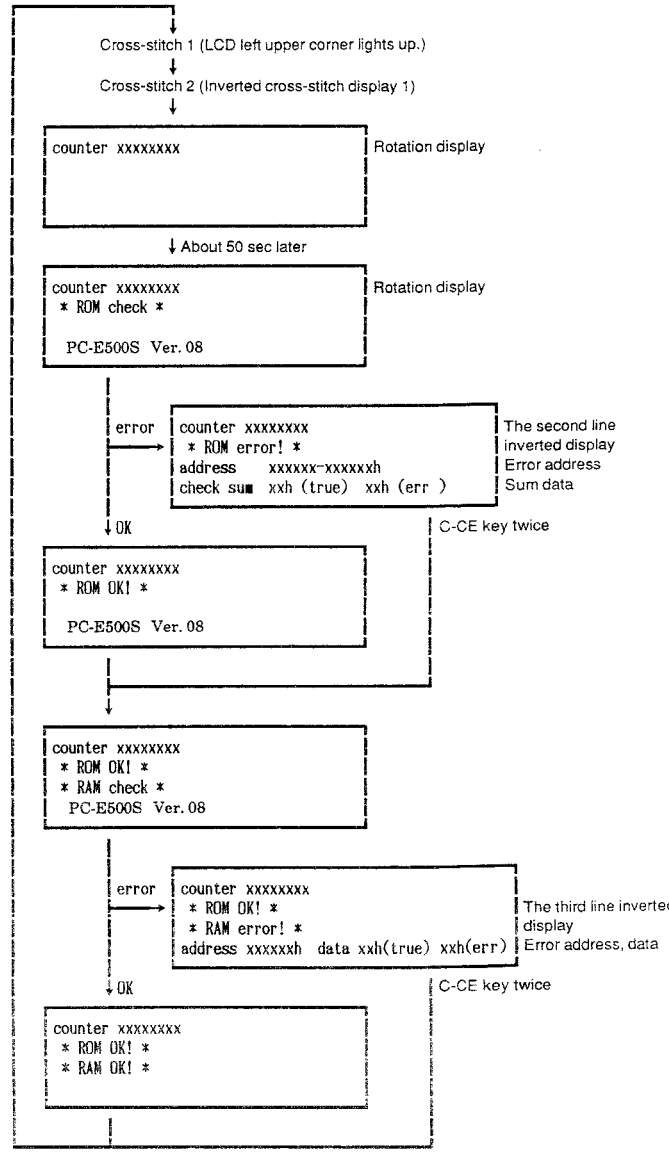
(2) LB check



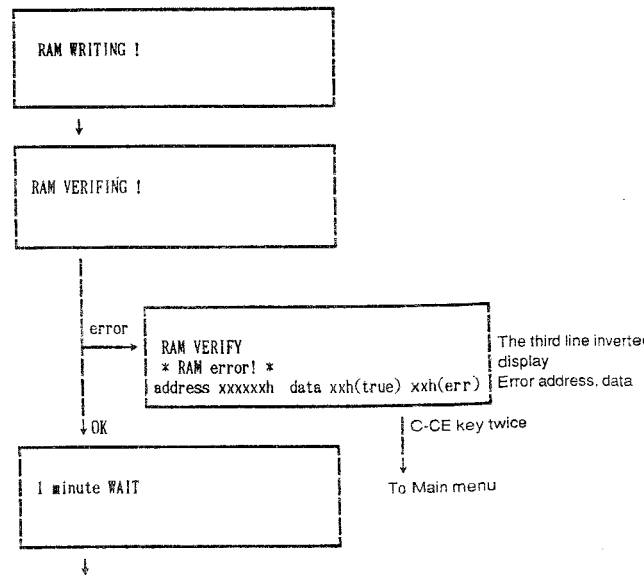
(3) Aging 1

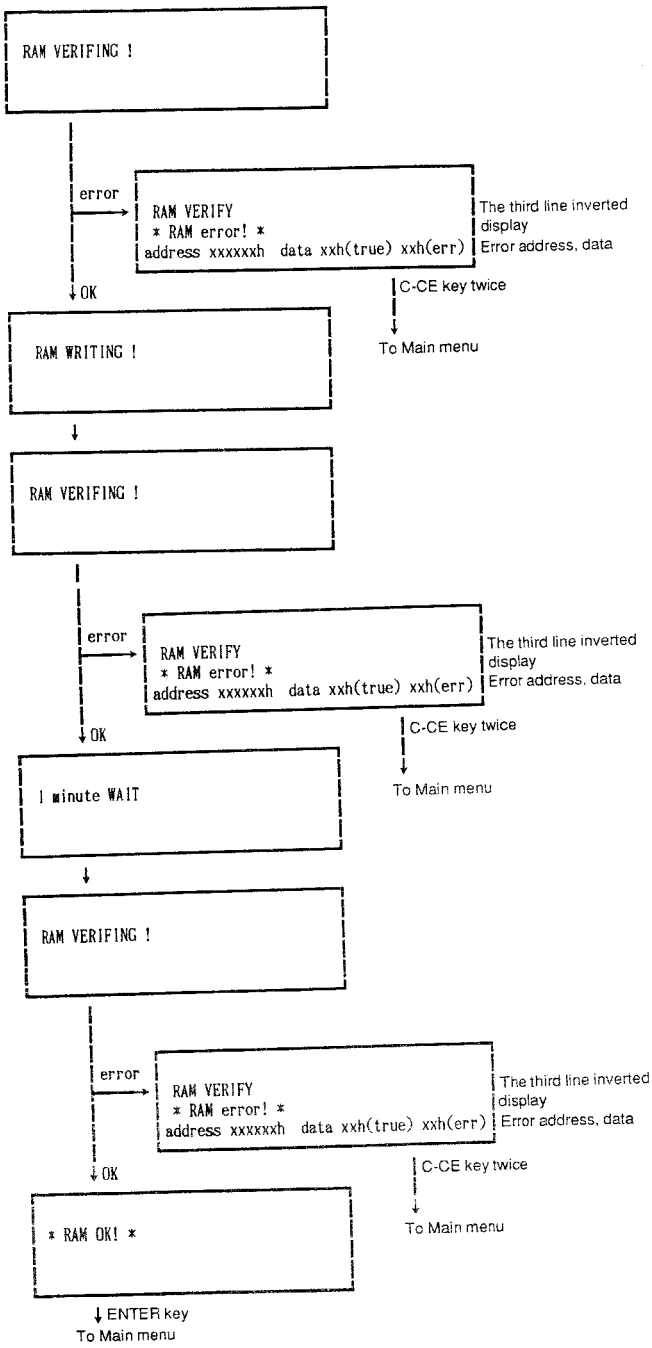


(4) Aging 2

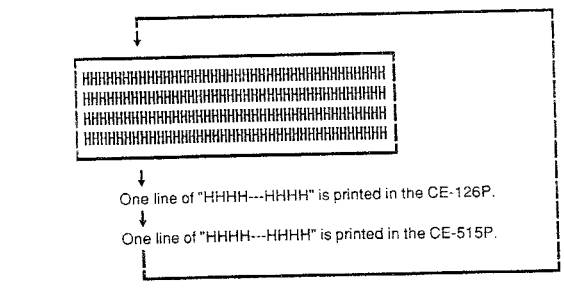


(5) RAM check



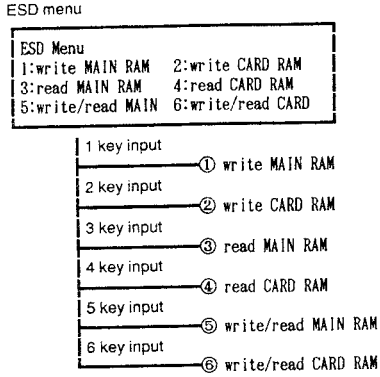


(6) FCC check

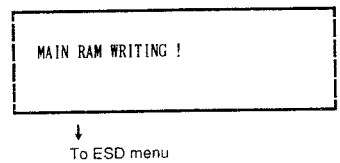


(7) ESD check

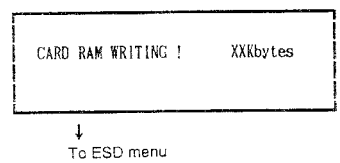
ESD menu



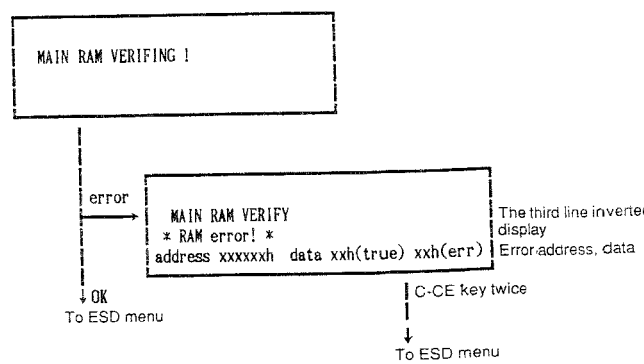
① write MAIN RAM



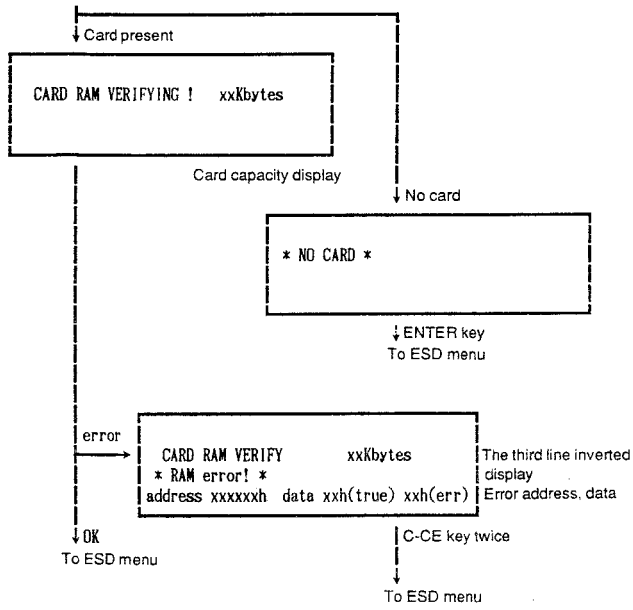
② write CARD RAM



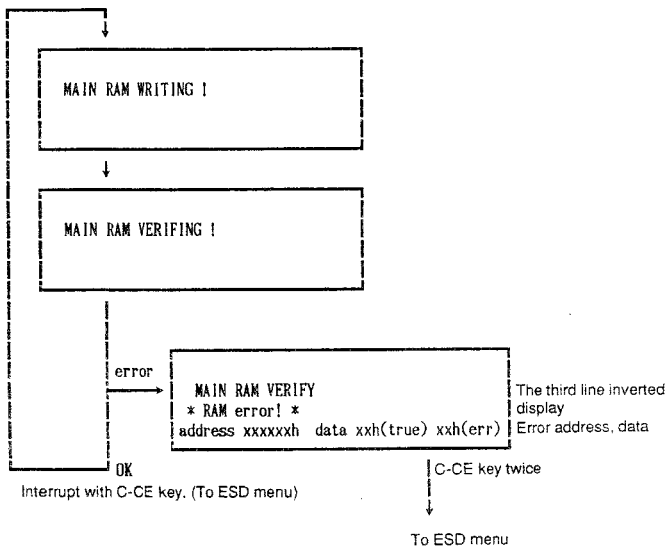
③ read MAIN RAM



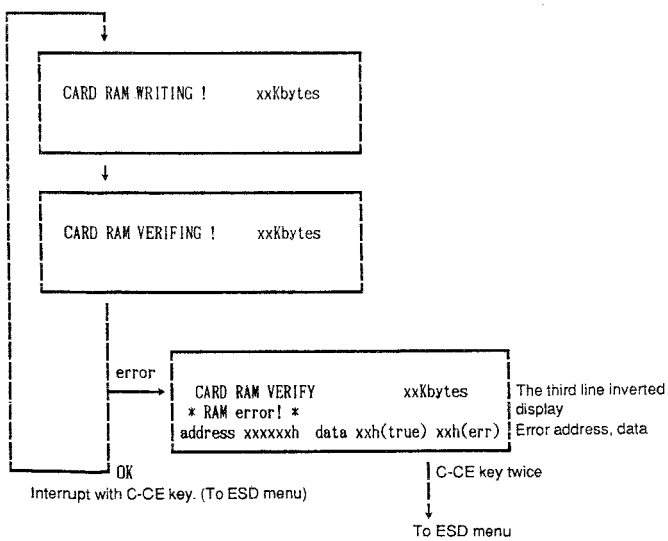
④ read CARD RAM



⑤ write/read MAIN RAM



⑥ write/read CARD RAM



(8) Diag check (menu form)

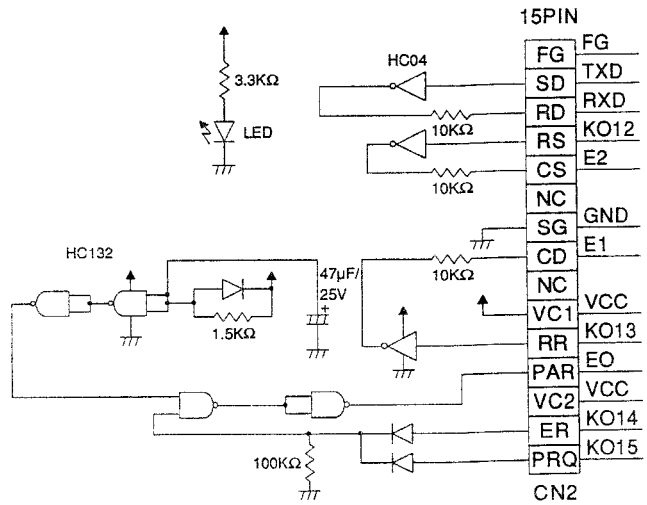
Perform each check of (1) diag check individually.

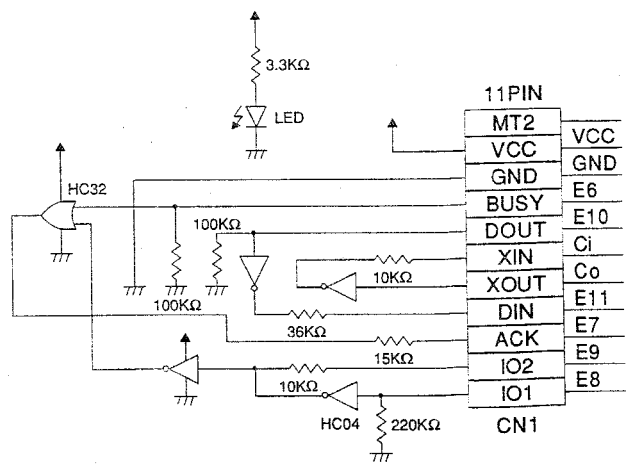
Diag menu

```
* check list 2 *
 1: LCD check      2: ROM check
 3: RAM check      4: KEY check
 5: 11pin check    6: 15pin check
```

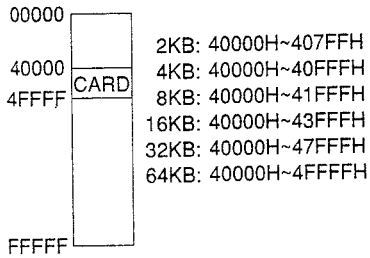
- 1 key input → (1) LCD check of (1) diag.
- 2 key input → (2) ROM check of (1) diag.
- 3 key input → (3) RAM check of (1) diag.
- 4 key input → (7) KEY check of (1) diag.
- 5 key input → (4) 11 pin check of (1) diag.
- 6 key input → (5) 15 pin check of (1) diag.

After completion of each check, the control returns to the diag menu.





- **RAM card address map**



- The address check is performed from the lower address to the higher. The error address which is found first is displayed.

- **Details of the error code**

(Example) In 11-pin check error:

Error code: 1 13 01

- 01 — Error value (Error output data)
- 13 — Normal value (Normal output data)
- 1 — Check No.

Refer to the 11-pin check code table.

	Output port					Input port					
No.	BUSY	Din	Dout	IO2	IO1	ACK	Din	Dout	IO2	IO1	Normal data
0	0	0	0	0	1	1	0	0	1	1	13

In the above table, if the output port signal is "000001," the input port signal "10011" is normal. ("10011" in the binary system is "13" in the hexadecimal system.)
If 11-pin check error code is "1 13 01," the input port signal should be "13 (10011)", and "01(00001)" means it is an error.
That is, data at ACK and IO2 are errors.

- **11 pin check code table**

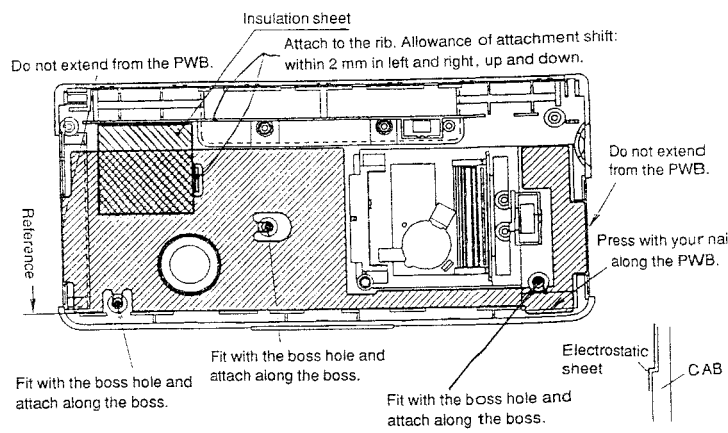
	Output port					Input port					
No.	BUSY	Din	Dout	IO2	IO1	ACK	Din	Dout	IO2	IO1	Normal data
0	0	0	0	0	0	0	0	0	0	0	08
1	0	0	0	0	1	1	0	0	1	1	19
2	0	0	0	1	0	1	0	0	1	1	08
3	0	0	0	1	1	1	0	0	1	1	1B
4	0	0	1	0	0	1	1	1	0	0	00
5	0	0	1	0	1	1	1	1	1	1	15
6	0	0	1	1	0	1	1	1	1	1	00
7	0	0	1	1	1	1	1	1	1	1	17
8	0	1	0	0	0	1	1	1	0	0	08
9	0	1	0	0	1	1	1	1	1	1	19
A	0	1	0	1	0	1	1	1	1	1	08
B	0	1	0	1	1	1	1	1	1	1	1B
C	0	1	1	0	0	1	1	1	0	0	08
D	0	1	1	0	1	1	1	1	1	1	1D
E	0	1	1	1	0	1	1	1	1	1	08
F	0	1	1	1	1	1	1	1	1	1	1F
10	1	0	0	0	0	1	0	0	0	0	1A
11	1	0	0	0	1	1	0	0	1	1	19
12	1	0	0	1	0	1	0	0	1	1	1A
13	1	0	0	1	1	1	0	0	1	1	1B
14	1	0	1	0	0	1	1	1	0	0	16
15	1	0	1	0	1	1	1	1	1	1	15
16	1	0	1	1	0	1	1	1	1	1	16
17	1	0	1	1	1	1	1	1	1	1	17
18	1	1	0	0	0	1	1	1	0	0	1A
19	1	1	0	0	1	1	1	1	1	1	19
1A	1	1	0	1	0	1	1	1	1	1	1A
1B	1	1	0	1	1	1	1	1	1	1	1B
1C	1	1	1	0	0	1	1	1	0	0	1E
1D	1	1	1	0	1	1	1	1	1	1	1D
1E	1	1	1	1	0	1	1	1	1	1	1E
1F	1	1	1	1	1	1	1	1	1	1	1F
20	X OUT					X IN					01

- **15 pin check code table**

	Output port				Input port			
No.	PRQ	ER	RR	RS	CS	CD	PAK	Normal data
0	0	0	0	0	0	0	0	00
1	0	0	0	1	1	0	0	04
2	0	0	1	0	0	1	0	02
3	0	0	1	1	1	1	0	06
4	0	1	0	0	0	0	1	01
5	0	1	0	1	1	0	1	05
6	0	1	1	0	0	1	1	03
7	0	1	1	1	1	1	1	07
8	1	0	0	0	0	0	1	01
9	1	0	0	1	1	0	1	05
A	1	0	1	0	0	1	1	03
B	1	0	1	1	1	1	1	07
C	1	1	0	0	0	0	1	01
D	1	1	0	1	1	0	1	05
E	1	1	1	0	0	1	1	03
F	1	1	1	1	1	1	1	07
20	SD				RD			01

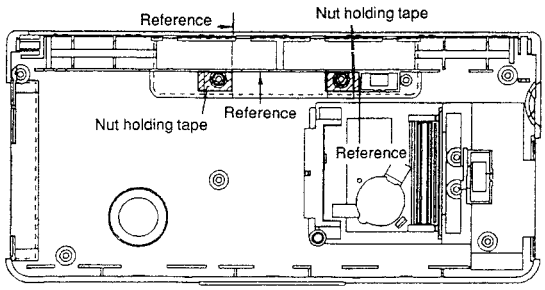
10. Note for servicing

1. Electrostatic sheet attachment

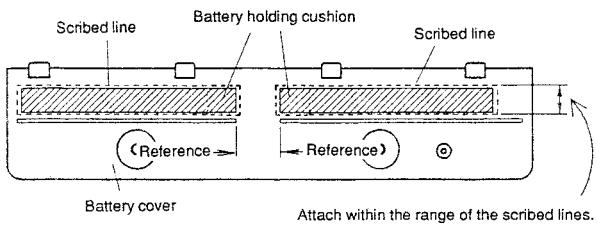

Insulation sheet
Attach to the rib. Allowance of attachment shift: within 2 mm in left and right, up and down.
Do not extend from the PWB.
Do not extend from the PWB.
Press with your nail along the PWB.
Reference
Fit with the boss hole and attach along the boss.
Fit with the boss hole and attach along the boss.
Fit with the boss hole and attach along the boss.
Electrostatic sheet
CAB

2. Nut holding tape attachment reference

After inserting the nut, attach according to the reference shown below:

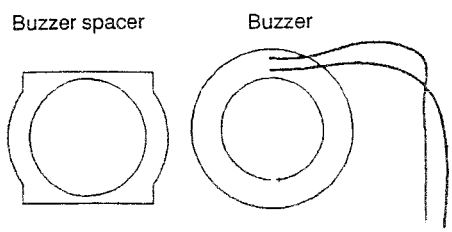


3. Battery holding cushion attachment reference

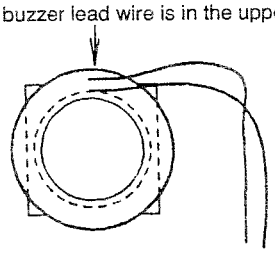


4. Buzzer attachment

① Remove the separation sheet from the buzzer spacer, and attach the buzzer to the spacer.

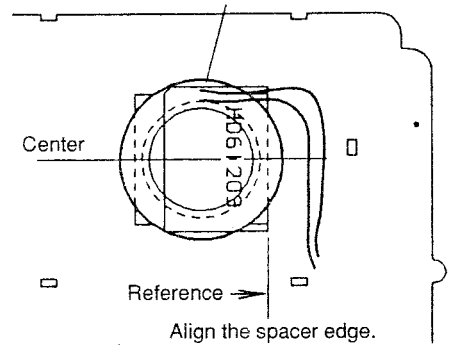


Fit R and attach properly so that the buzzer lead wire is in the upper side.

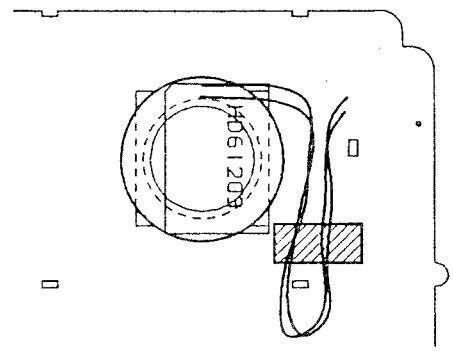


② Attach the assembly over the HD61203 on the PWB.

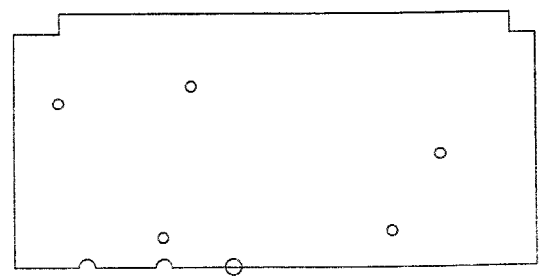
Attach so that the lead wire is in the upper side.



③ Solder the lead wire and fix with tape.

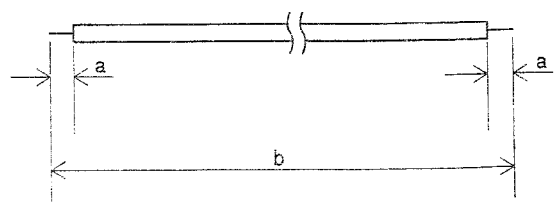


5. PWB fixing screw attachment position



6. Note for handling PWB

① Jumper wire process

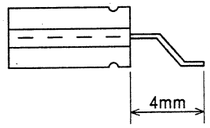


	J1	J2
Dimension a	1~2	1~2
Dimension b	115	70

② Electrostatic capacitor process and soldering

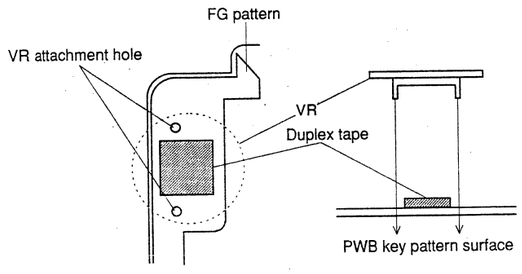
C12: 220 uF

- Be careful to the polarities.
- When soldering, bring the capacitor into close contact with the PWB.
- For soldering position, refer to the parts arrangement view.



③ Contrast VR solderin

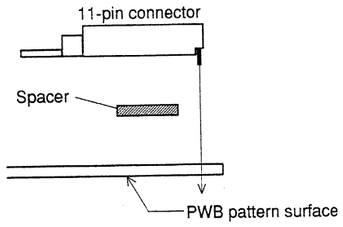
- Attach duplex tape so that it does not cover the VR attachment hole and does not extend from the PWB edge and the FG pattern.
- Solder form above the duplex tape.
- * Do not apply the soldering iron for more than 3 sec. (This is to prevent deformation of the VR.)
- * Be careful not to deform the VR.
- * Put the VR closely to the PWB and solder it.



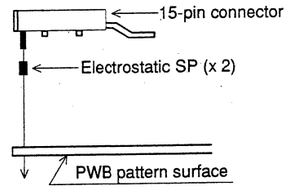
④ 11-pin, 15-pin connectors soldering

* 11-pin connector soldering

- Attach the spacer to the 11-pin connector.
- Insert the 11-pin connector to the PWB. Solder the inserted lead wires (x 2) first, then solder the 11-pin lead wire.
- Attach the connector closely to the PWB and solder it.

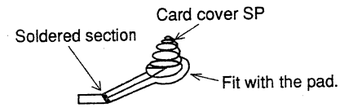


- **15-pin connector soldering**
  - Attach two electrostatic SP to the 15-pin connector lead wire.
  - Insert the 15-pin connector to the PWB. Solder the inserted lead wires (x 2) first, then solder the 15-pin lead wire.
  - * Attach the connector closely to the PWB and solder it.



⑤ Card cover SP soldering

- Insert the card cover SP into the PWB, and solder it.
- * Solder perpendicularly to the PWB.
- * Take care when handling after soldering.

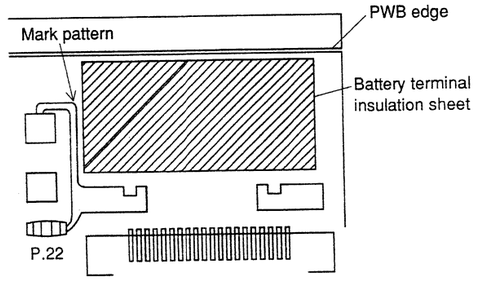


⑥ Insulation sheet attachment

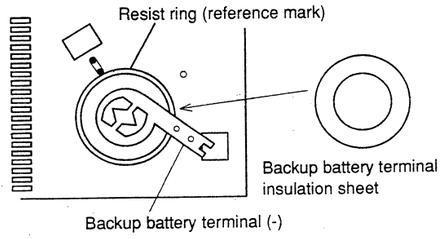
Insulation sheet attachment

- Fit the insulation sheet hole with the PWB screw hole and attach it.
- For the attachment position, refer to the parts arrangement view.

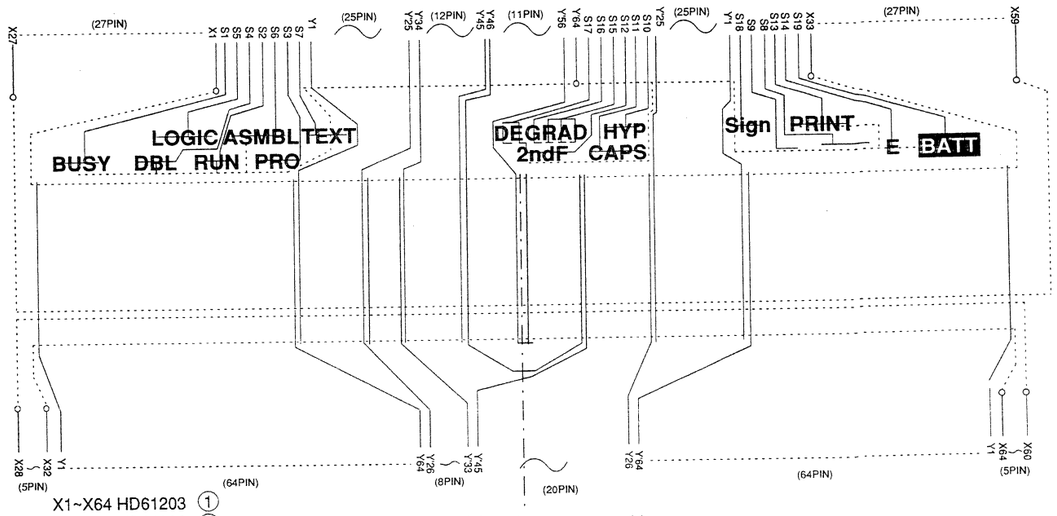
- **Battery terminal insulation sheet attachment**
  - Fit the upper edge of the battery terminal insulation sheet to the PWB edge and fit the left edge to the marking pattern, and attach it.
  - Attach so that it does not extend from the PWB edges.



- **Backup battery terminal insulation sheet attachment**
  - Fit the backup battery terminal insulation sheet to the resist ring (reference mark), and attach it from above the backup battery terminal (-).



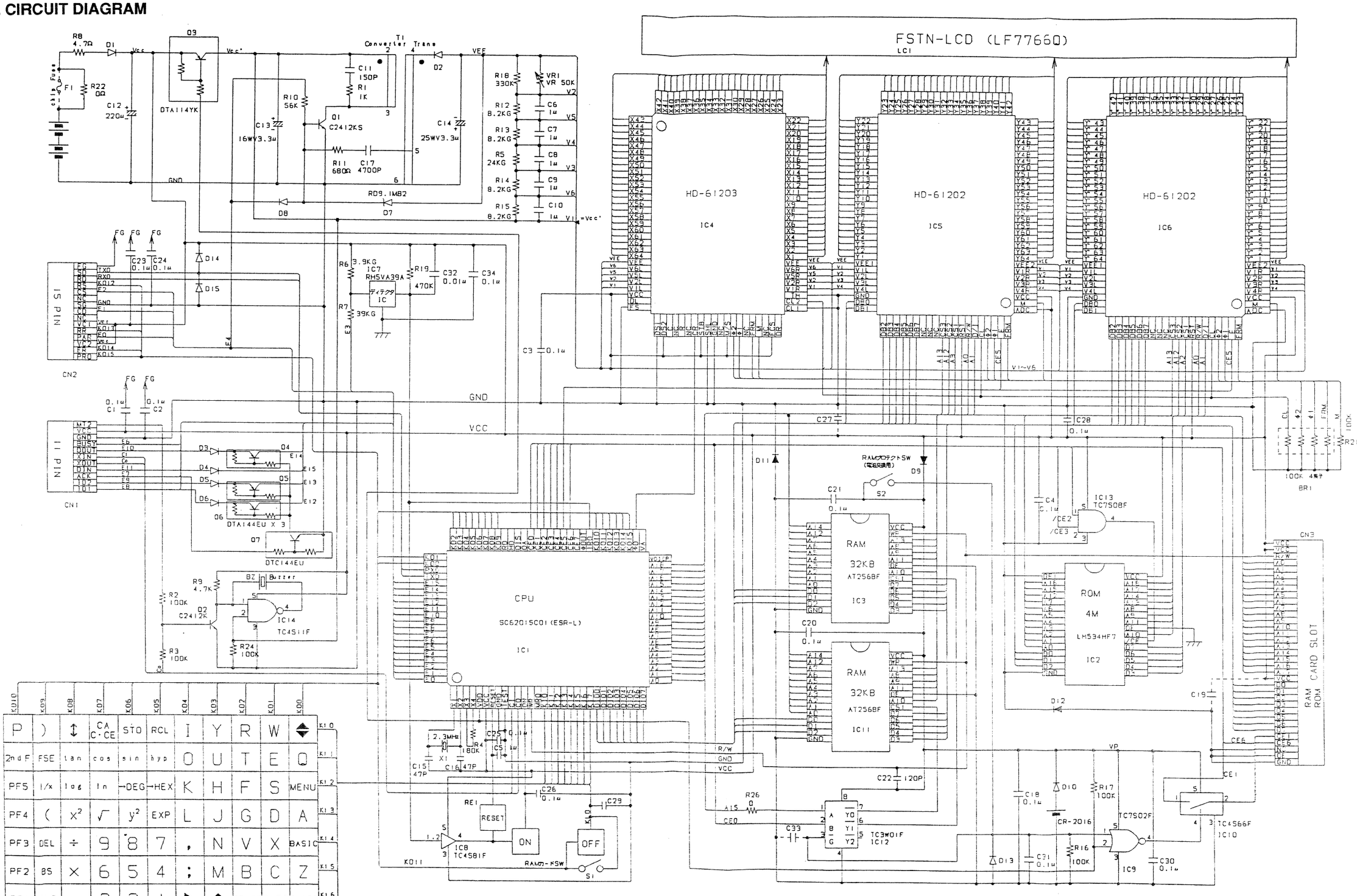
11. LCD wiring diagram



X1~X64 HD61203 ①
Y1~Y64 HD61202 ②
Y'1~Y'56 HD61202
Symbols LOGIC, AMSMBL, TEXT, and Sign are not used.
S5, S6, S7, S8 : Y'64

Center division of the common side

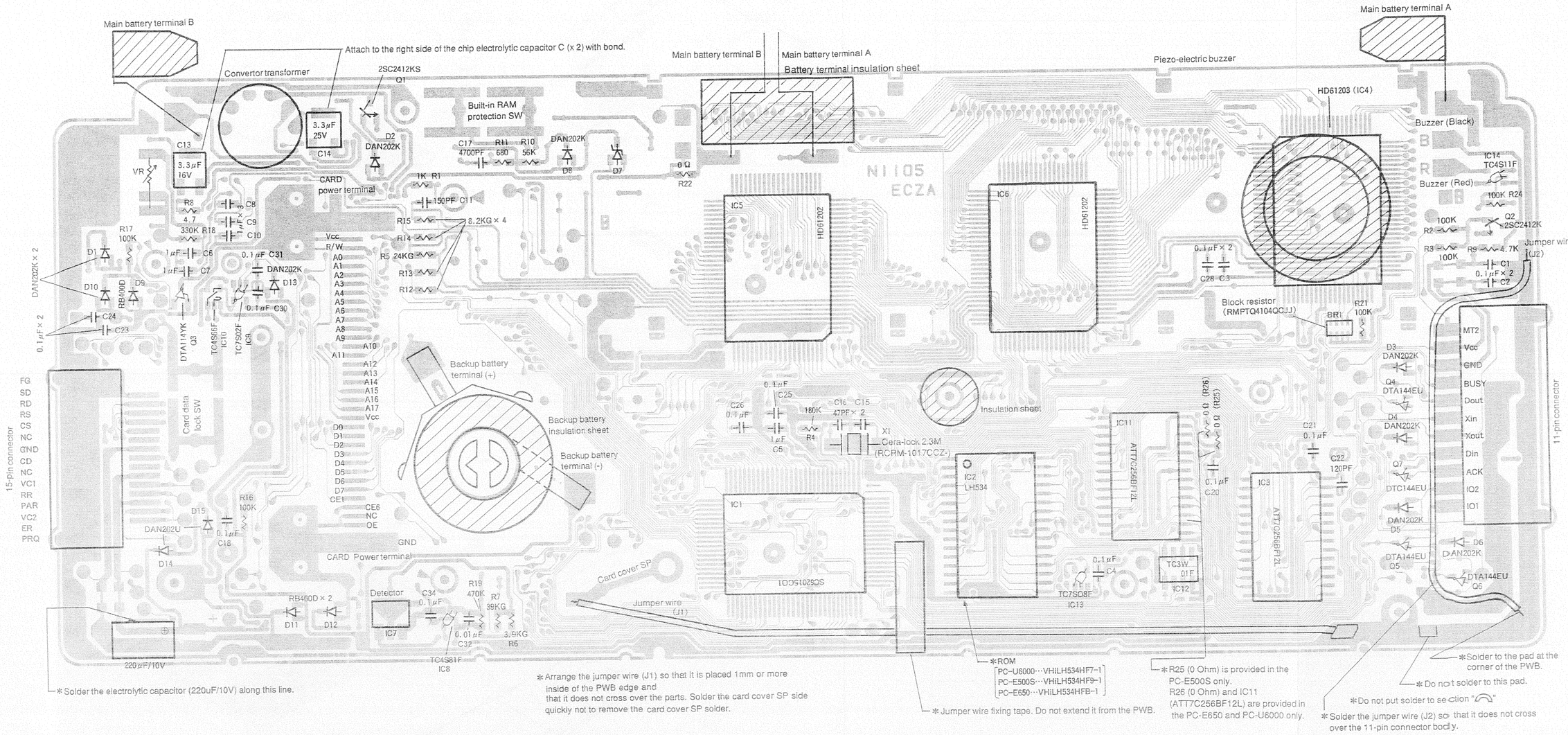
12. CIRCUIT DIAGRAM



Note 1: Unless otherwise specified, diodes are as shown below: RB400D, DAN202K

Note 2: Unless otherwise specified, the accuracy of resistance is +-5%.

13. PWB LAYOUT



* Solder the electrolytic capacitor (220uF/10V) along this line.

* Arrange the jumper wire (J1) so that it is placed 1mm or more inside of the PWB edge and that it does not cross over the parts. Solder the card cover SP side quickly not to remove the card cover SP solder.

* Jumper wire fixing tape. Do not extend it from the PWB.

* ROM
  - PC-U6000···VHiLH534HF7-1
  - PC-E500S···VHiLH534HF9-1
  - PC-E650···VHiLH534HFB-1

* R25 (0 Ohm) is provided in the PC-E500S only.
  R26 (0 Ohm) and IC11 (ATT7C256BF12L) are provided in the PC-E650 and PC-U6000 only.

* Solder to the pad at the corner of the PWB.

* Do not solder to this pad.

* Do not put solder to section "⌒"

* Solder the jumper wire (J2) so that it does not cross over the 11-pin connector body.

☆ Different parts in different models are shown below:

	ROM(IC2)	R25	R26	IC11
PC-E500S	VHiLH534HF9-1	○	×	×
PC-E650	VHiLH534HFB-1	×	○	○
PC-U6000	VHiLH534HF7-1	×	○	○

○ Provided. × Not provided.

14. PARTS GUIDE

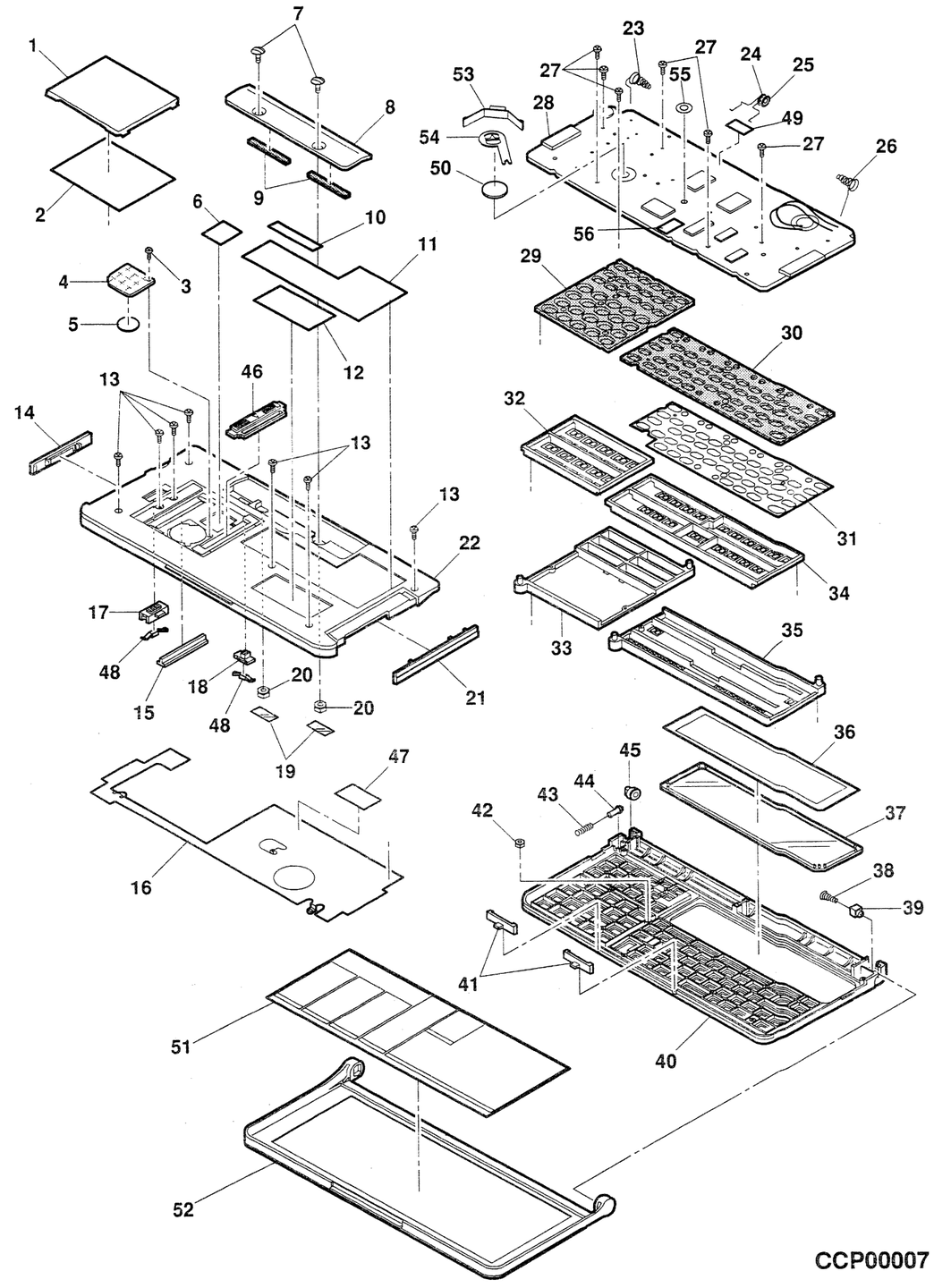
PCE500S

1 Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	GFTAU1006EC03	AK	N	D	Card lid
2	TLABH1267ECZZ	AC		D	Battery replacement label B
3	LX-BZ1036ECZZ	AA		C	Screw
4	GFTAC1306CCZZ	AD		D	Battery cover
5	PZETL1046ECZZ	AA		C	Insulation sheet for battery
6	TCAUK1242CCZZ	AA		D	Caution label
7	LX-BZ1034ECZZ	AC		C	Screw
8	GFTAB1023EC01	AE	N	D	Battery lid
9	PCUSS1026ECZZ	AB		C	Cushion(for battery fix)
10	TLABH1313ECZZ	AB		D	Battery direction caution label
11	TLABH1314ECZZ	AD	N	D	Battery replacement label
12	TLABM1316ECZZ	AC	N	D	Name plate [Germany]
	TLABM1321ECZZ	AC	N	D	Name plate [U.S.A]
	TLABM1315ECZZ	AC	N	D	Name plate [except Germany,U.S.A]
13	LX-BZ1263CCZZ	AA		C	Screw (2×8.5)
14	GFTAS1025EC01	AC	N	D	Connector lid B
15	PGUMS1549CCZZ	AE		C	PWB card connector
16	PTPEH1059ECZZ	AF		D	Shield tape A
17	MSLiP1031CC09	AC	N	C	Slide switch slider
18	JKNBZ1225CC02	AA		C	Slide switch knob
19	PTPEH1061ECZZ	AA		D	Nut fixing tape
20	XNESD20-16000	AA		C	Nut (2mm)
21	GFTAS1024EC01	AC	N	D	Connector lid A
22	GCABA1062EC01	AK	N	D	Bottom cabinet
23	QTANB1029ECZZ	AB		C	Battery terminal B ⊖
24	QTANB1027ECZZ	AB		C	Battery terminal B ⊕
25	QTANB1026ECZZ	AB		C	Battery terminal A ⊕
26	QTANB1031ECZZ	AB	N	C	Battery terminal ⊖
27	LX-BZ1109CCZZ	AA		C	Screw (2×4.5)
28	DUNTK1564ECZZ	BV	N	E	PWB unit (include No.53~56)
29	PGUMM1042ECZZ	AH		C	Key rubber A
30	PGUMM1043ECZZ	AK		C	Key rubber B
31	PSHEZ1039ECZZ	AC		C	Noise sheet
32	JKNBZ1031EC01	AK	N	C	Key frame A-1
33	JKNBZ1032EC01	AH	N	C	Key frame A-2
34	JKNBZ1033EC01	AH	N	C	Key frame B-1
35	JKNBZ1034EC01	AN	N	C	Key frame B-2
36	PSLDP1036ECZZ	AE	N	C	Display mask
37	PFiLW1018ECZZ	AF		D	Acryl filter
38	MSPRC1018ECZZ	AA		C	Hinge slide spring
39	NSFTZ1005EC01	AC	N	C	Hinge shaft A
40	GCABB1061EC01	AS	N	D	Top cabinet
41	JKNBZ1030EC01	AC	N	C	Lock knob
42	LX-NZ1020CCZZ	AA		C	Nut
43	MSPRC1019ECZZ	AA		C	Hinge lock spring
44	LPiNS1004EC01	AC	N	C	Lock pin
45	NSFTZ1006EC01	AC	N	C	Hinge shaft B
46	LFiX-1190CCB2	AC	N	C	Card stopper
47	PZETL1070ECZZ	AB		C	Insulation sheet
48	QCNTM1023CCZZ	AB		C	Slide switch terminal
49	PZETL1068ECZZ	AB		C	Battery terminal insulation sheet
50	PZETL1825CCZZ	AA		C	Battery terminal insulation sheet(for back up)
51	TLABZ1317ECZZ	AG	N	D	Command list label
52	GCASP1009EC01	AM	N	D	Hard case
53	QTANZ1030ECZZ	AC		C	Terminal for back up battery ⊕
54	QTANZ1583CC07	AB		C	Battery terminal ⊖
55	PZETL1069ECZZ	AB		C	PWB insulation sheet
56	PZETL1851CCZZ	AA		C	Insulation sheet

2 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	TiNSG1223ECZZ	AW	N	D	Instruction book [Germany]
	TiNSE1221ECZZ	AY	N	D	Instruction book [U.S.A]
	TiNSE1222ECZZ	AY	N	D	Instruction book [except Germany,U.S.A]
2	SPAKC0531ECZZ	AK	N	D	Packing case [except U.S.A,Canada]
	SPAKC0529ECZZ	AK	N	D	Packing case [U.S.A]
	SPAKC0530ECZZ	AK	N	D	Packing case [Canada]
3	SPAKA881ECCZZ	AG		D	Packing cushion for set
4	SPAK-0525ECZZ	AC		D	Viney bag
5	SSAKA0006UCZZ	AA		D	Vinyl bag (50mm×60mm)
6	TCADZ1016ECZZ	AB		D	Driver illustration
7	TGANE1113CCZZ	AC		D	Guaranty [Australia]
	TGANE1002CSZZ	AB		D	Guaranty [Canada]
8	TCADZ1808CCZZ	AA		D	Noise card [Canada]
9	TCAUZ1341CCZZ	AA		D	Card [Germany]



CCP00007

2 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
10	UKÖGD1009CCZZ	AC		S	Driver ⊕

3 PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DUNT-1541ECZZ	BD		E	LCD unit
2	MSPRC1020ECZZ	AB		C	Card lid spring
3	MSPRC1277CCZZ	AA		C	Connector spring (for 15pin connector)
4	PGUMS1044ECZZ	AB		C	Rubber connector
5	PSPAP1024ECZZ	AC		C	Spacer for buzzer
6	PSPAP1289CCZZ	AA		C	Spacer for 11pin connector
7	PTPEH1062ECZZ	AA		D	Tape (7×7)
8	PZETL1069ECZZ	AB		C	PWB insulation sheet
9	PZETL1851CCZZ	AA		C	Insulation sheet
10	QCNCW1001EC1A	AG		C	Connector (11pin) [CN1]
11	QCNCW1368CC1E	AM		C	Connector (15pin) [CN2]
12	QTANZ1030ECZZ	AC		C	Terminal for back up battery ⊕
13	QTANZ1478CCSA	AC		C	Power terminal
14	QTANZ1583CC07	AB		C	Battery terminal ⊖
15	RALMB1030CC01	AD		B	Buzzer [BZ]
16	RC-CZ1093CCZZ	AB		C	Capacitor (0.1μF) [C5,6,7,8,9,10]
17	RC-EZ227DCC1A	AB		C	Capacitor (10WV 220μF) [C12]
18	RCRM-1017CCZZ	AE		B	Crystal (2.3M) [X1]
19	RMPTQ4104QCJJ	AB		B	Block resistor (100KΩ×4 ±5%) [BR1]
20	RTRNH1004ECZZ	AE		B	Converter transformer [T1]
21	RVR-Z5450QCZZ	AF		B	Variable resistor (50KΩ) [VR]
22	VCCCCY1HH121J	AA		C	Capacitor (50WV 120PF) [C22]
23	VCCCCY1HH151J	AA		C	Capacitor (50WV 150PF) [C11]
24	VCCCCY1HH470J	AA		C	Capacitor (50WV 47PF) [C15,16]
25	VCEAPE1CW335M	AC		C	Capacitor (16WV 3.3μF) [C13]
26	VCEAPE1EW335M	AC		C	Capacitor (25WV 3.3μF) [C14]
27	VCKYCY1EF103Z	AA		C	Capacitor (25WV 0.010μF) [C32]
28	VCKYCY1EF104Z	AA		C	Capacitor (25WV 0.10μF) [C1~4,18,20,21,23~26,28,30,31,34]
29	VCKYCY1HB472K	AA		C	Capacitor (50WV 4700PF) [C17]
30	VHDDAN202K/-1	AB		B	Diode (DAN202K) [D1,2,3,4,5,6,8,10,13]
31	VHDDAN202U/-1	AB		B	Diode (DAN202U) [D14,15]
32	VHDRB400D//-1	AC		B	Diode (RB400D) [D9,11,12]
33	VHERD9.1MB2-1	AC		B	Zener diode (HZ9C1) [D7]
34	VHiAT256BF12L	AY		B	IC (AT256BF12L) [IC3]
35	VHiHD61202/-1	AS		B	IC (HD61202) [IC5,6]
36	VHiHD61203/-1	AX		B	IC (HD61203) [IC4]
37	VHiLH534HF9-1	AW	N	B	IC (LH534HF9) [IC2]
38	VHiRH5VA39A-1	AE		B	IC (RH5VA39A) [IC7]
39	VHiSC62015C01	AZ		B	IC (SC62015C01) [IC1]
40	VHiTC3W01F/-1	AD		B	IC (TC3W01F) [IC12]
41	VHiTC4S11F/-1	AC		B	IC (TC4S11F) [IC14]
42	VHiTC4S66F/-1	AC		B	IC (TC4S66F) [IC10]
43	VHiTC4S81FTPR	AC		B	IC (TC4S81FTPR) [IC8]
44	VHiTC7S02F/-1	AC		B	IC (TC7S02F) [IC9]
45	VHiTC7S08F/-1	AC		B	IC (TC7S08) [IC13]
46	VRS-TS2AD000J	AA		C	Resistor (1/4W 0Ω ±5%) [R22,25]
47	VRS-TS2AD102J	AA		C	Resistor (1/10W 1KΩ ±5%) [R1]
48	VRS-TS2AD104J	AA		C	Resistor (1/10W 100KΩ ±5%) [R2,3,16,17,21,24]
49	VRS-TS2AD184J	AA		C	Resistor (1/10W 180KΩ ±5%) [R4]
50	VRS-TS2AD243G	AA		C	Resistor (1/10W 24KΩ ±2%) [R5]
51	VRS-TS2AD334J	AA		C	Resistor (1/10W 330KΩ ±5%) [R18]
52	VRS-TS2AD392G	AA		C	Resistor (1/10W 3.9KΩ ±2%) [R6]
53	VRS-TS2AD393G	AA		C	Resistor (1/10W 39KΩ ±2%) [R7]
54	VRS-TS2AD4R7J	AA		C	Resistor (1/10W 4.7Ω ±5%) [R8]
55	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%) [R9]
56	VRS-TS2AD474J	AA		C	Resistor (1/10W 470KΩ ±5%) [R19]
57	VRS-TS2AD563J	AA		C	Resistor (1/10W 56KΩ ±5%) [R10]
58	VRS-TS2AD681J	AA		C	Resistor (1/10W 680Ω ±5%) [R11]
59	VRS-TS2AD822G	AA		C	Resistor (1/10W 8.2KΩ ±2%) [R12,13,14,15]
60	VSDTA114YK/-1	AC		B	Transistor (DTA114YK) [Q3]
61	VSDTA144EU/-1	AB		B	Transistor (DTA144EU) [Q4,5,6]
62	VSDTC144EU/-1	AB		B	Transistor (DTC144EU) [Q7]
63	VS2SC2412K/-1	AB		B	Transistor (2SC2412K) [Q2]
64	VS2SC2412KS-1	AB		B	Transistor (2SC2412KS) [Q1]
	(Unit)				
901	DUNTK1564ECZZ	BV	N	E	PWB unit

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type recommandé par le constructeur.
Mettre au rébut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfare vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

COPYRIGHT © 1993 BY SHARP CORPORATION
All rights reserved.
Printed in Japan.
No part of this publication may be reproduced,
stored in a retrieval system, or transmitted,
in any form or by any means,
electronic, mechanical, photocopying, recording, or otherwise,
without prior written permission of the publisher.

SHARP CORPORATION
Information Systems Group
Quality & Reliability Control Center
Yamatokoriyama, Nara 639-11, Japan
1993 May Printed in Japan Ⓢ

Date: May 12, 1995
No. : P-115

POCKET COMPUTER: PC-E500S

Technical Report

[Parts changes: Vol. 75]

CHANGE OF THE DETECTOR IN ACCORDANCE WITH THE IMPROVEMENT OF ELECTROSTATIC PRESSURE RESISTANCE

1. Model name: PC-E500S

2. General: The detector for the pocket computer PC-E500S has been changed to improve electrostatic pressure resistance.

3. Parts change:

Ref No.	Model name	Version	P/G No.	Current parts	New parts		Parts name	Effective time	Interchangeability	Note
				Parts code	Parts code	Price rank				
1	PC-E500S	All	3 - 38	VHIRH5VA39A-1	VHIRH5VL39AA1	AE	Detector	Apr. '95	1	—

<Interchange>

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of new type. New type can be used in place of current type.	6. Others.

Parts marked with "⚠" is important for maintaining the safety of the set.
Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Date: Aug. 4, 1995

POCKET COMPUTER: PC-E500S

No. : P-116

Technical Report

[Parts changes: Vol. —]

PARTS CHANGES IN ACCORDANCE WITH THE STRENGTHENED LIQUID CRYSTAL

1. Model name: PC-E500S

2. General: The bottom cabinet of the pocket computer PC-E500S has been changed to strengthen the adopted liquid crystal against crack.
The shield sheet and insulation sheet have been changed accordingly.

3. Parts change:

Ref No.	Model name	Version	P/G No.	Current parts	New parts		Parts name	Effective time	Interchangeability	Note
				Parts code	Parts code	Price rank				
1	PC-E500S	All	1 - 22	GCABA1062EC01	GCABA1062EC03	AL	Bottom cabinet unit	Apr. '95	5	—
			1 - 16	PTPEH1059ECZZ	PTPEH1065ECZZ	AH	Shield sheet			
			1 - 47	PZETL1070ECZZ	—	—	Insulation sheet			Disused

<Interchange>

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of new type. New type can be used in place of current type.	6. Others.

Parts marked with "⚠" is important for maintaining the safety of the set.
Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Technical Report

3017
432
439
2704

DISUSE & ELIMINATION OF THE F MARK FOR EUROPE

1. Model name: PC-E500S/1248N/1403H/V550A/V550C/V550D, CE-126P

2. General: CE mark indication is compulsory from January, 1996 in Europe, and the F mark unnecessary to put on now for the above sets has been disused and the same mark on the rating plate has been eliminated.

3. Parts change:

Ref No.	Model name	Version	P/G No.	Current parts	New parts		Parts name	Effective time	Interchangeability	Note
				Parts code	Parts code	Price rank				
1	PC-E500S	Germany	1-12	TLABM1353ECZZ	TLABM1359ECZZ	AE	Rating plate	Apr. '96	3	—
	PC-1248N PC-1403H		—	TLABF2085CCZZ	—	—	F mark label			Disuse
	PC-V550A			TLABM1350ECZZ	TLABM1360ECZZ	AE	Rating plate			—
	PC-V550C			TLABM1351ECZZ	TLABM1361ECZZ	AE	Rating plate			
	PC-V550D			TLABM1352ECZZ	TLABM1362ECZZ	AE	Rating plate			
	CE-126P			TLABF2272CCZZ	—	—	F mark label			Disuse

<Interchange>

1. Interchangeable.	4. Not interchangeable.
2. Current type can be used in place of new type. New type cannot be used in place of current type.	5. Interchangeable if replaced with same types of related parts in use.
3. Current type cannot be used in place of new type. New type can be used in place of current type.	6. Others.

Parts marked with "⚠" is important for maintaining the safety of the set.
Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.